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Date: December 19, 2022

Re: **Pedestrian Wind Study**
2634, 2636, 2640, 2642, & 2654 Eglinton Avenue West and 1856 & 1856A Keele Street
Toronto, ON
SLR Project #241.030657.00000

Prepared by

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For

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1.0 INTRODUCTION

SLR Consulting (Canada) Ltd. (SLR) was retained by Fora Developments to conduct a pedestrian wind study for the proposed development site at 2634, 2636, 2640, 2642, & 2654 Eglinton Avenue West and 1856 & 1856A Keele Street in Toronto, Ontario. This report is in support of the combined Zoning Bylaw Amendment (ZBA) and Site Plan Approval (SPA) application for the development.

1.1 Existing Site

The proposed development is located located at 2634, 2636, 2640, 2642, and 2654 Eglinton Avenue West, on the north side of the street, between Trethewey Drive and Keele Street. The site is currently occupied by two low-rise commercial developments. **Figure 1** provides an aerial view of the immediate study area. A virtual site visit was conducted by SLR using Google Earth images dated October 2021, August and September 2022. Several images of the site and surroundings are included in **Figures 2a** through **2d**.

Immediately surrounding the site are low-rise commercial and residential developments in all directions. Beyond the immediate surroundings are also mainly low-rise commercial or residential buildings in all directions, with Don Valley Park to the west.

Typically, developments with ZBA approval/or those currently under construction within the context extents are included as existing surroundings. For this assessment, no such development were found within the project vicinity.

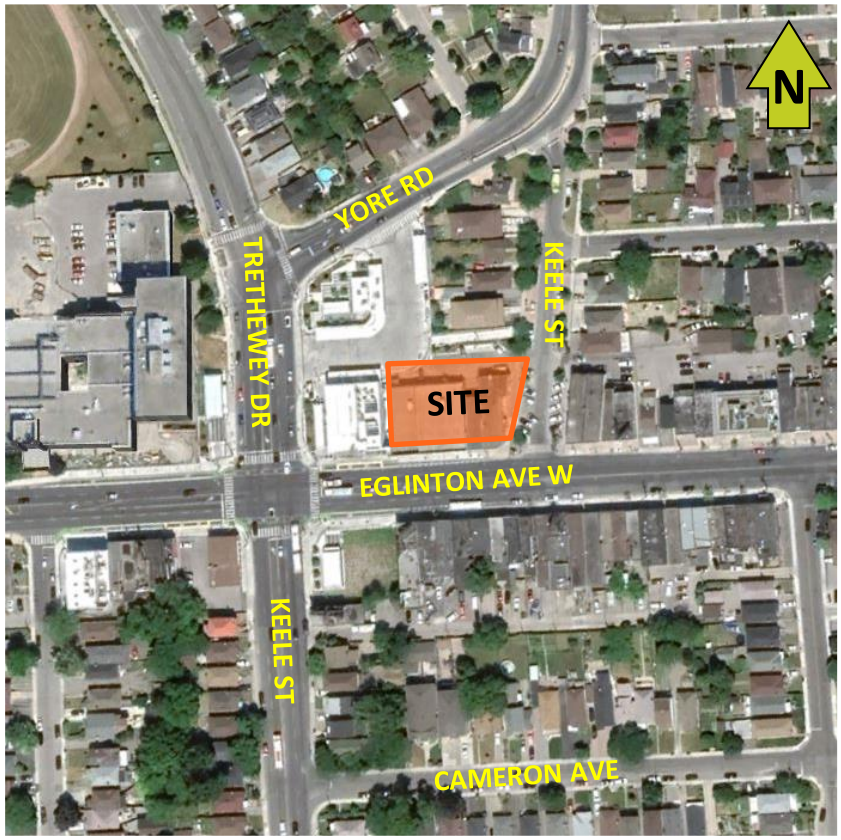


Figure 1: Aerial view of existing site & surroundings
Credit: Google Earth Pro, dated 6/23/2022

Figure 2a: Looking east along Eglinton Avenue West (Site to the left)

Figure 2b: Looking north along Trethewey Drive

Figure 2c: Looking south at Keele Street (site to the right)

Figure 2d: Looking southwest along Yore Road

1.2 Proposed Development

The proposed development will be a 33-storey mixed-use building atop a four-storey podium for a total height of approximately 110 m including the mechanical penthouse. A rendering of the proposed development is provided in Figure 3.

1.3 Areas of Interest

Areas of interest for pedestrian wind conditions include those areas which pedestrians are expected to use on a frequent basis. Typically, these include sidewalks, main entrances, transit stops, plazas and parks. There are several nearby transit stops along Eglinton Avenue West, Keele Street and Yore Road.

The main entrance to the proposed development is located near the southwest corner of the building. The retail entrance is located near the middle of the east façade, with secondary entrances are located along the north and south facades. On-site areas of interest are shown in Figure 4. In addition, an outdoor amenity terrace is located on Level 4 of the proposed development.

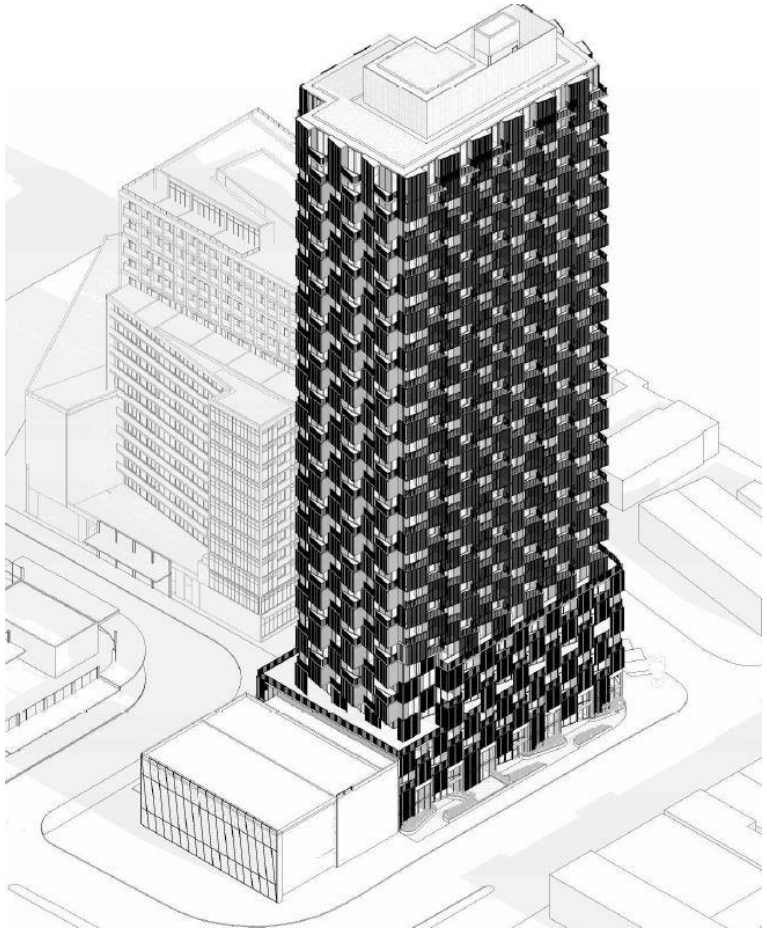


Figure 3: Rendering of proposed development
*Credit: gh3**

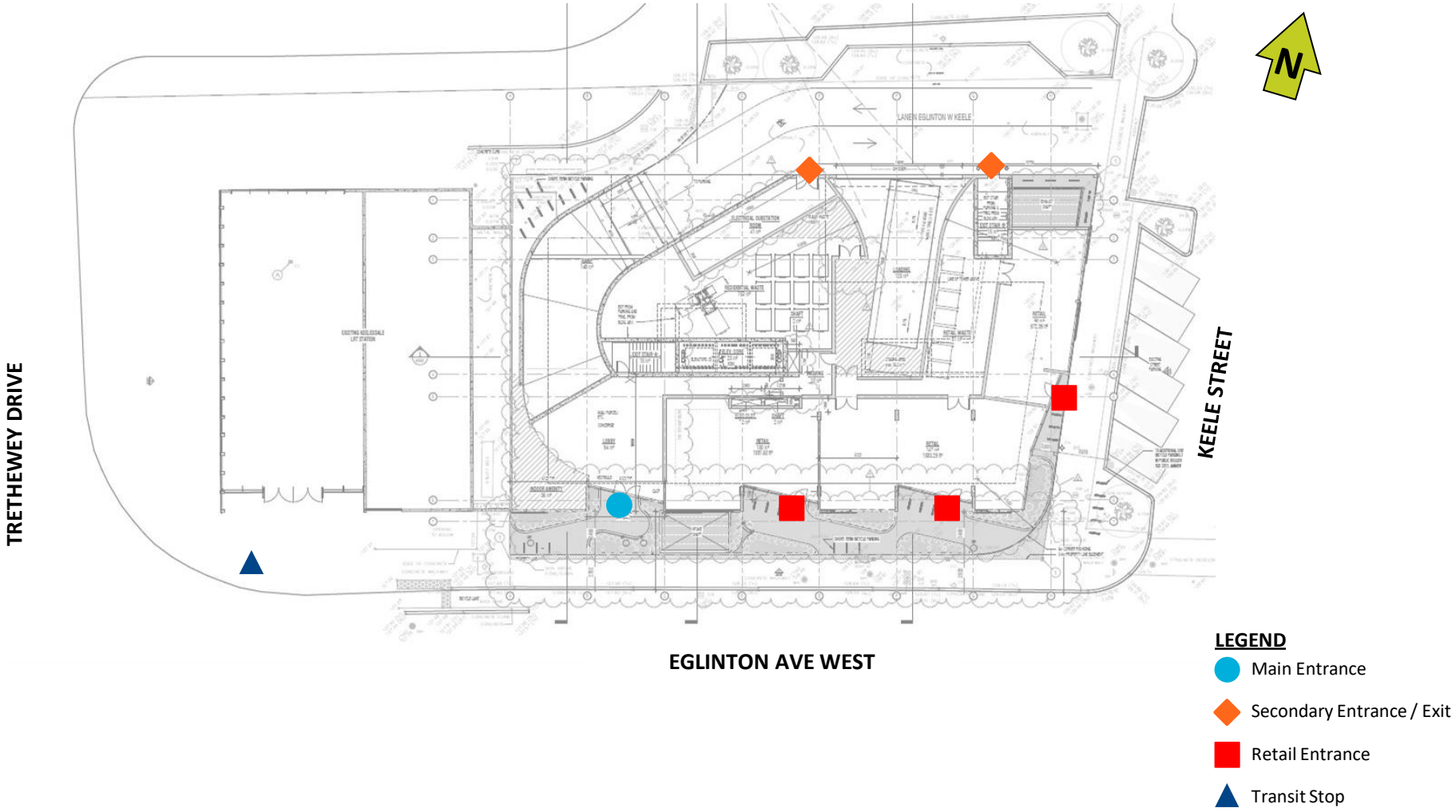


Figure 4: Areas of Interest

2.0 APPROACH

The objective of the wind tunnel study is to assist the design team and City Planning officials in making informed decisions about the building form considered and its influence on pedestrian comfort. This quantitative analysis involves the construction of a physical model of the development and surrounding features that influence wind flow. The physical model is instrumented with probes and tested in a wind tunnel. Afterwards, the wind tunnel data are combined with regional meteorological data; this analysis is then compared to the relevant wind criteria and standards in order to determine how appropriate the wind conditions are for the intended pedestrian usage.

2.1 Scale Model Construction

A 1:400 scale model of the 2636-2654 Eglinton Avenue West Development was constructed based on up-to-date drawing information received by SLR on October 7, 2022.

The proximity model of the surrounding area was built in block form for a radius of approximately 480 m from the site centre. As existing buildings surrounding the site will influence wind characteristics, existing buildings, those under construction and those buildings with Zoning Bylaw Amendment (ZBA) approval were included in the model for both the Existing and Proposed Configurations. Information regarding which approved developments to include within the existing surrounds was determined using the City of Toronto website, as well as discussion with the design team. A list of the approved surrounding development applications was provided to the City Planner for review and comment. Grade differences within the limits of the model were found to be minor, thus the site was modeled as flat.

SLR tested two configurations in the wind tunnel. The descriptions are below:

- **Existing Configuration:** Existing site and surroundings.
- **Proposed Configuration:** Proposed development with existing site and surroundings.

Photographs of the wind tunnel model showing both the Existing and Proposed Configurations are included in **Figures 5a** and **5b**.

2.2 Wind Tunnel

Wind tunnel tests were conducted in the Alan G. Davenport Wind Engineering Group Boundary-Layer Wind Tunnel Laboratory at the University of Western Ontario. The upstream test section of the wind tunnel included generic roughness blocks and turbulence-generating spires to modify the wind flow approaching the model. These features develop characteristics of the wind flow that are similar to the actual site. The test model is rotated on a turn-table to simulate different wind directions with the upstream terrain being changed as appropriate to reflect the various upwind conditions encountered around the site.

The test model was equipped with 79 omni-directional probes to record wind speed at the pedestrian-level (approximately 1.5 m above grade). The orientation of the model was rotated in 10° intervals on the turn-table to permit measurement of wind speed at each probe location for 36 wind directions. The wind tunnel data were then combined with the wind climate model for this region to predict the occurrence of wind speeds in the pedestrian realm and compare against wind criteria for comfort and safety.

Figure 5a: Existing Configuration

Figure 5b: Proposed Configuration

2.3 Wind Climate

Wind data recorded at the Toronto Pearson International Airport for the period of 1991 to 2020 were obtained and analysed to create a wind climate model for the region. Annual and seasonal wind distribution diagrams ("wind roses") are shown in Figure 6. These diagrams illustrate the percentage of time wind blows from the 16 main compass directions. Of main interest are the longest peaks that identify the most frequently occurring wind directions. The annual wind rose indicates that wind approaching from the northwest quadrant are most prevalent. The seasonal wind roses readily show how the prevalent winds shift throughout the year.

The directions from which stronger winds (e.g., > 30 km/h) approach are also of interest as they have the highest potential of creating problematic wind conditions, depending upon site exposure and the building configurations. The wind roses in Figure 6 also identify the directional frequency of these stronger winds, as indicated in the figure's legend colour key. On an annual basis, strong winds occur from the west-southwest through northwest to north directions. All wind speeds and directions were included in the wind climate model.

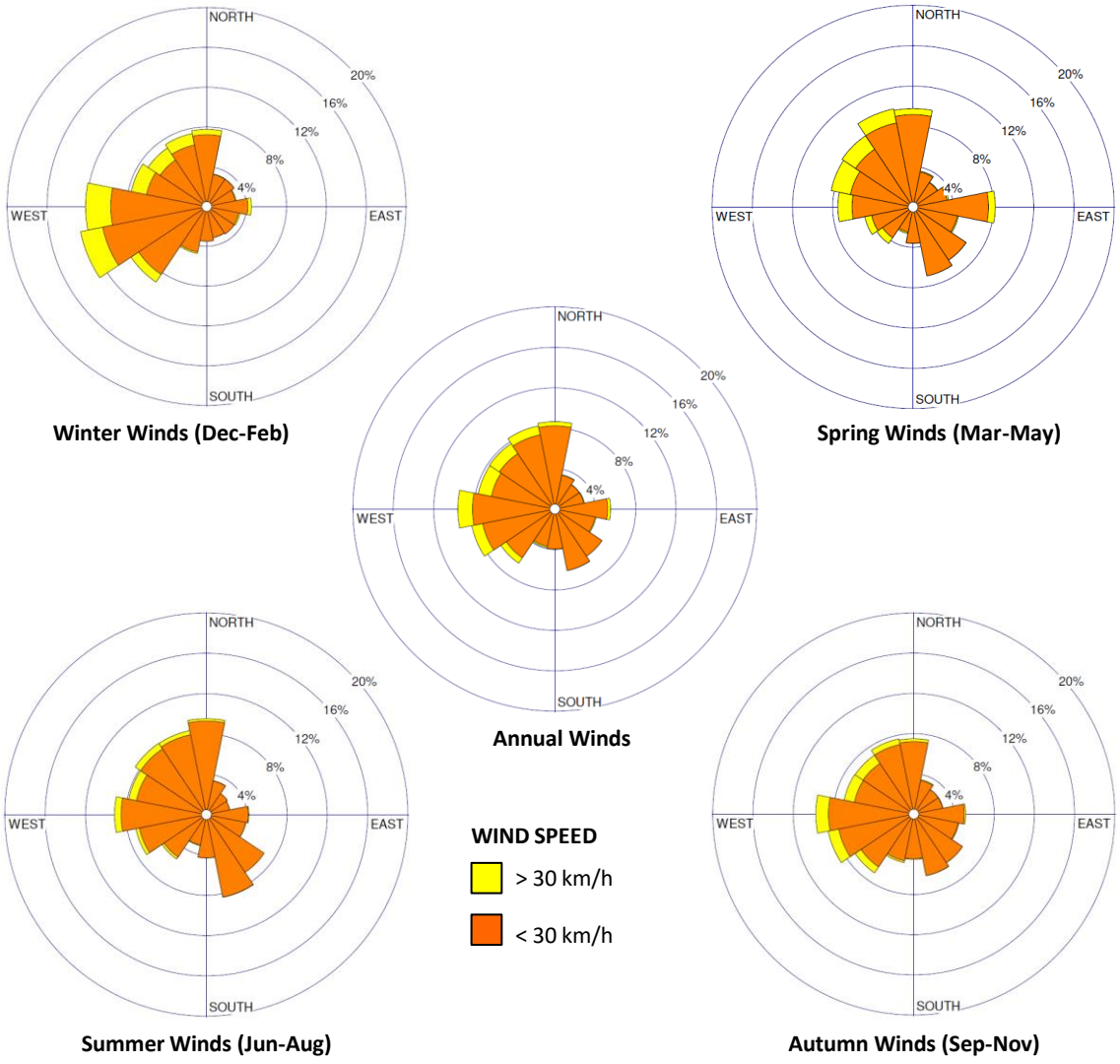


Figure 6: Wind Roses for Toronto Pearson International Airport (1991-2020)

3.0 PEDESTRIAN WIND CRITERIA

Wind comfort conditions are discussed in terms of being acceptable for certain pedestrian activities and are based on predicted wind force and the expected frequency of occurrence. Wind chill, clothing, humidity and exposure to direct sun, for example, all affect a person's thermal comfort; however, these influences are not considered in the wind comfort criteria.

The comfort criteria, which are based on certain predicted hourly GEM wind speeds being exceeded 20% of the time, are summarized in **Table 1**. By allowing for a 20% exceedance, it assumes wind speeds will be comfortable for the corresponding activity at least four out of five days. The comfort criteria consider only daytime hours, between 6:00am and 11:00pm. GEM is defined as the maximum mean wind speed or the gust wind speed divided by 1.85.

The criterion for wind safety in the table is based on hourly gust wind speeds that are exceeded nine hours per year (approximately 0.1% of the time). When the criterion is exceeded, wind mitigation measures are advised. The wind safety criterion is shown in **Table 2**.

These criteria are based on the *Pedestrian Level Wind Study Terms of Reference Guide* of the City of Toronto, which came into effect in June 2022.

Table 1: Wind Comfort Criteria

Comfort Category	Comfort Ranges for GEM Wind Speed Exceeded 20% of the Time	Description of Wind Comfort
Sitting	≤ 10 km/h	Light breezes desired for outdoor seating areas where one can read a paper without having it blown away.
Standing	≤ 15 km/h	Gentle breezes suitable for passive pedestrian activities where a breeze may be tolerated.
Walking	≤ 20 km/h	Relatively high speeds that can be tolerated during intentional walking, running and other active movements.
Uncomfortable	> 20 km/h	Strong winds, considered a nuisance for most activities.

Table 2: Wind Safety Criterion

Activity	Safety Criterion Gust Wind Speed Exceeded 0.1% of the Time	Description of Wind Effects
Any	> 90 km/h	Excessive gust speeds that can adversely affect safety and a pedestrian's balance and footing. Wind mitigation is typically required.

4.0 RESULTS

Figures 7a through 9b present graphical images of the wind comfort conditions for the summer and winter months around the proposed development. These represent the seasonal extremes of best and worst case. Wind comfort conditions for spring and autumn are shown in Appendix A. The "comfort zones" shown are based on an integration of wind speed and frequency for all 36 wind directions tested with the seasonal wind climate model. The presence of mature trees can lead to wind comfort levels that are marginally more comfortable than shown, during seasons when foliage is present. The annual wind safety conditions are shown in Figures 10a and 10b. Table 2 in Appendix B provides the detailed wind comfort and safety conditions for all seasons.

There are generally accepted wind comfort levels that are desired for various pedestrian uses. However, in some regions these may be difficult to achieve in the winter due to the overall climate. For sidewalks, walkways loading areas and laneways, wind comfort suitable for walking is desirable year-round. For main entrances, transit stops, and outdoor amenity spaces intended for pets, wind conditions conducive to standing are preferred throughout the year. For areas such as park benches, seating for restaurants and cafes, and outdoor amenity spaces, including play areas for children, wind conditions suitable for sitting are desired throughout the year, as calmer winds are expected for the comfort of patrons and the public.

4.1 Building Entrances & Walkways (Locations 1-7)

Existing wind conditions on the site are comfortable for sitting or standing year-round (Figures 7a and 7b).

In the Proposed Configuration, wind conditions on the site are generally comfortable for walking in the summer (Figure 8a). However, during the winter, wind conditions on-site are generally uncomfortable (Figure 8b).

At the main entrance (near Location 4), retail entrances (near Locations 1 and 3) and secondary entrances (Location 6) wind conditions are comfortable for walking in the summer. During the winter, wind conditions are uncomfortable at the main entrance and retail entrances and at one of the secondary entrance (Locations 1, 3 and 4 in Figure 8b).

The strong wind flows on-site are due to the overall exposure of the site to the prevailing northwesterly and westerly winds. With no buildings of similar height in the vicinity, there are no upwind obstructions to provide protection from the prevailing winds. Therefore, the strong wind flows that occur at higher elevations are redirected down to grade by the mass of the development, creating local wind accelerations around the base of the tower. To improve wind conditions on the site, we recommend the design team consider massing modifications (i.e., height, step-backs, larger podium space etc.) as well as the inclusion of local wind mitigation features (i.e., canopies, wind screens) to reduce the impact of these downwashing flows at grade level.

In addition, we recommend locating entrances at least 5 m away from building corners to avoid the areas with strong wind accelerations. Also, the design team should consider including local wind mitigation features (i.e., canopies, wind screens) and/or recessing the entrances from the main facade as to provide shelter at the doors.

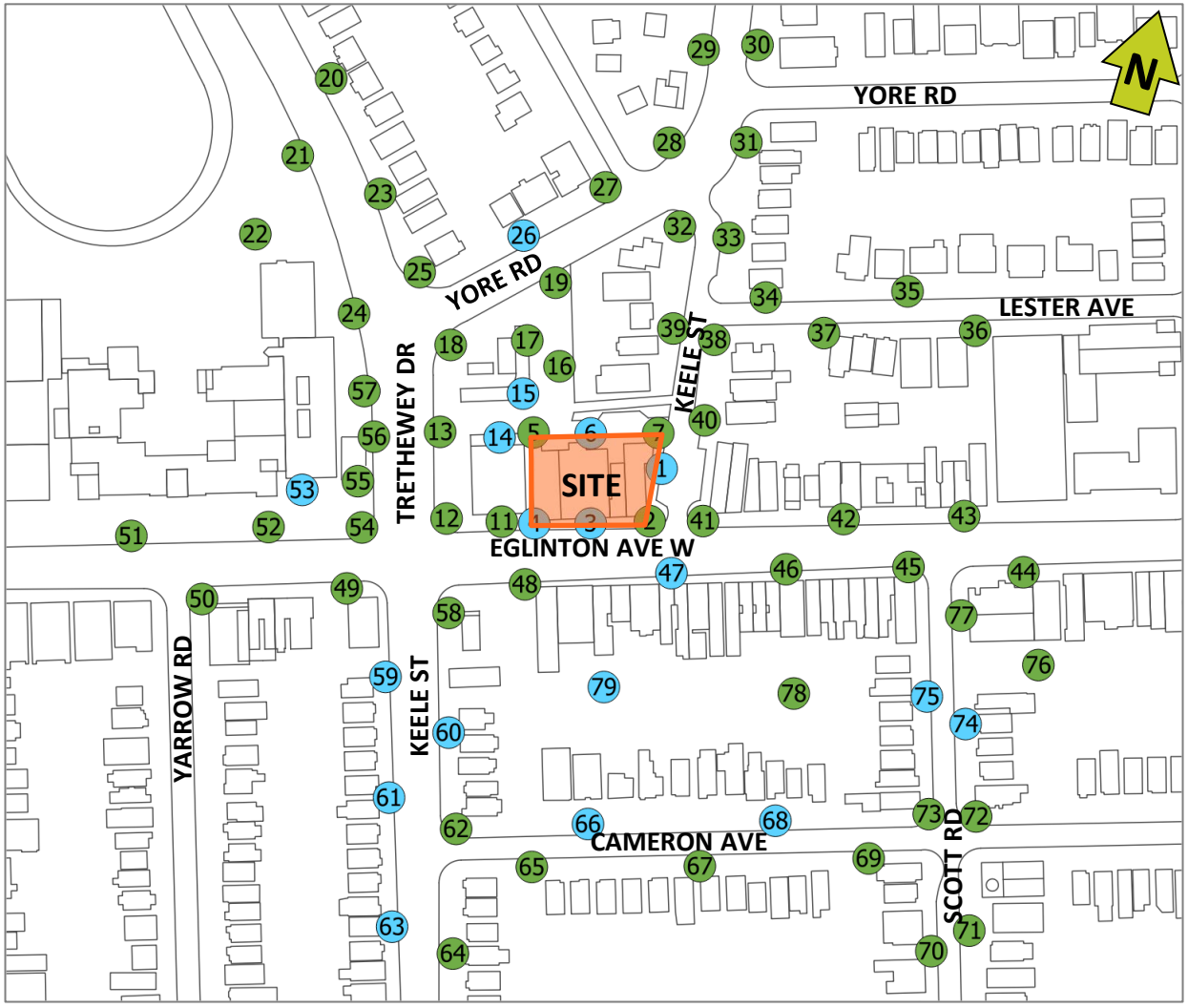


Figure 7a: Existing Configuration – Pedestrian Wind Comfort – Summer – On-site & Surrounding Sidewalks

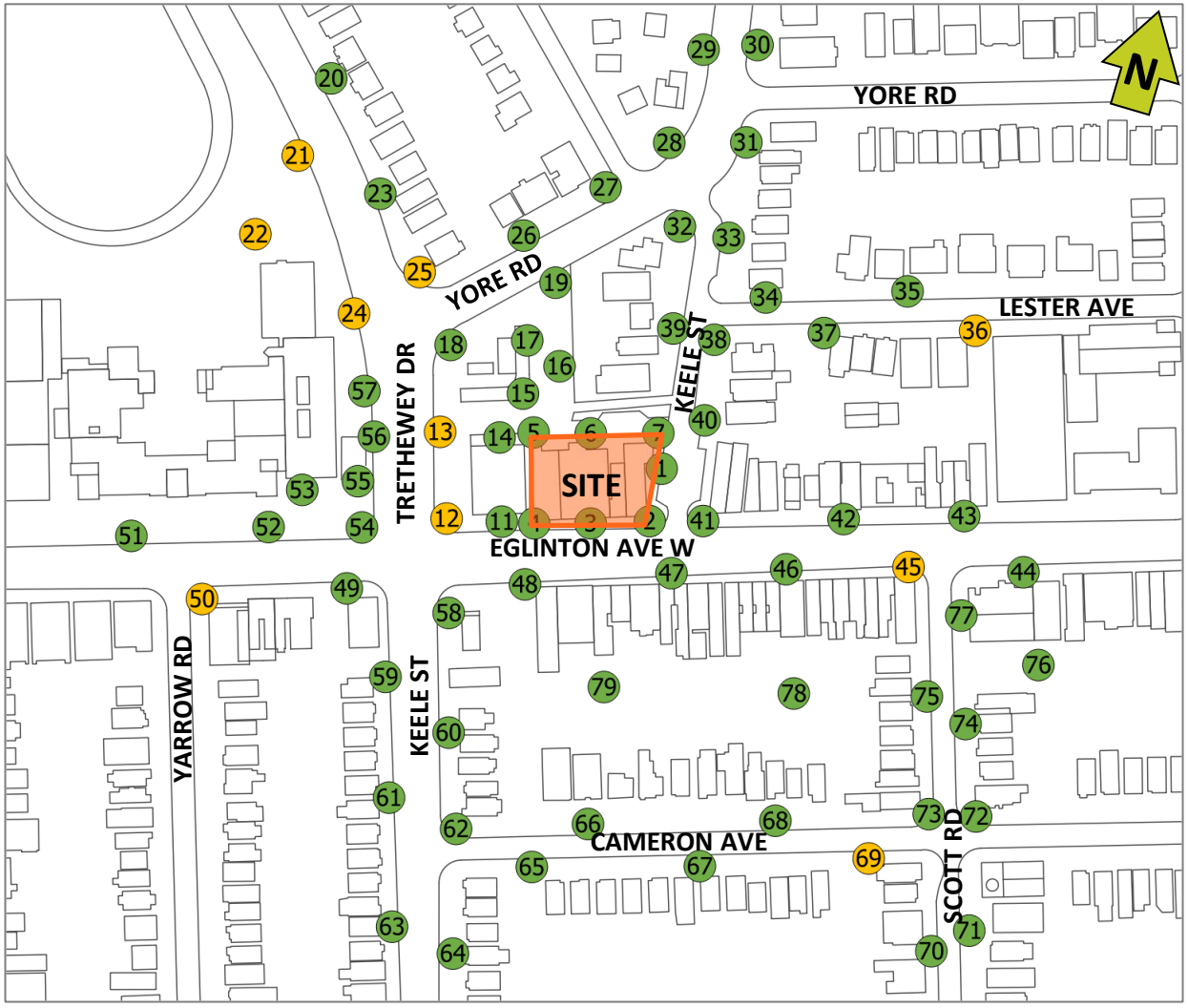


Figure 7b: Existing Configuration – Pedestrian Wind Comfort – Winter – On-site & Surrounding Sidewalks

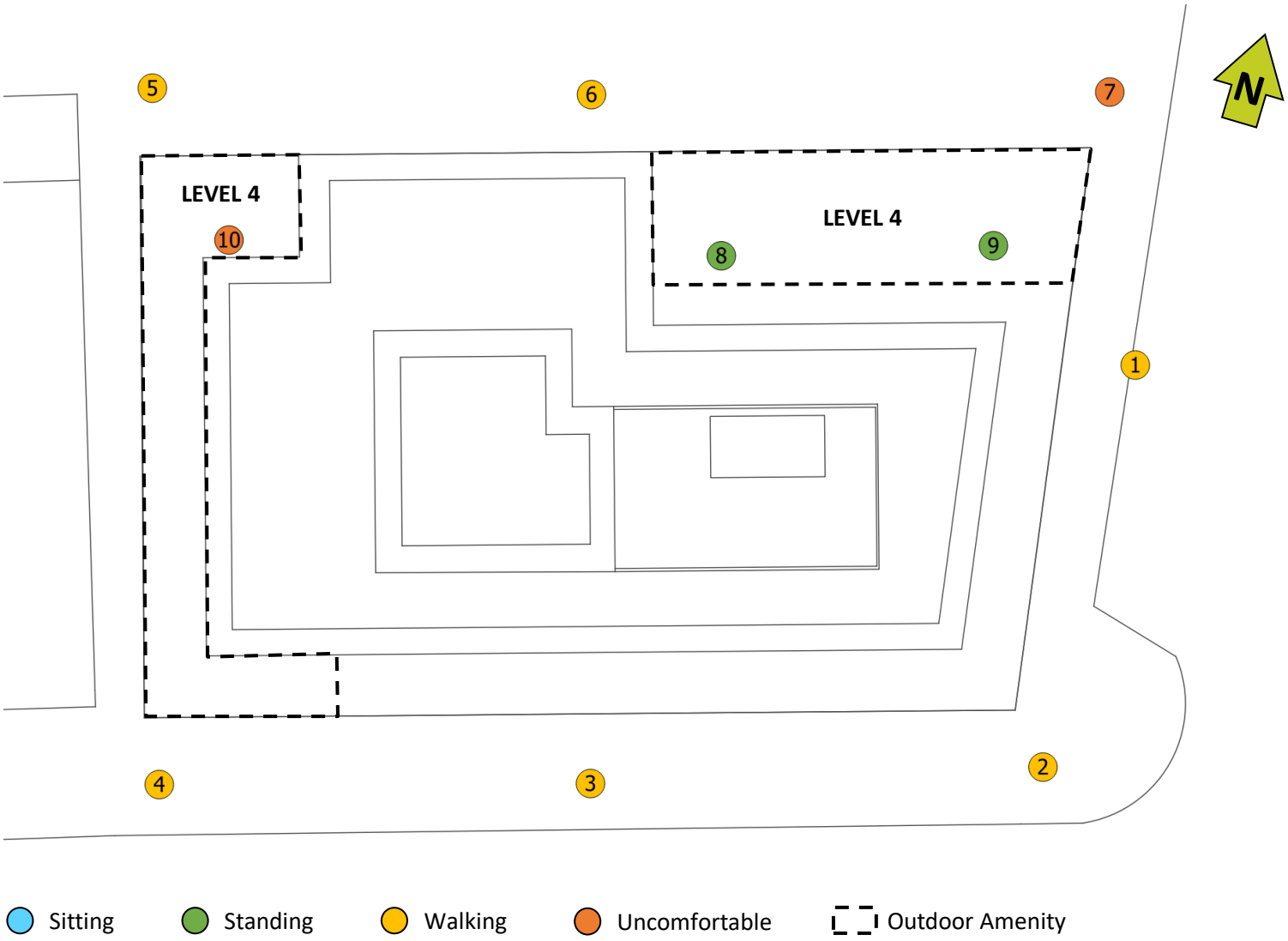


Figure 8a: Proposed Configuration – Pedestrian Wind Comfort – Summer – Building Entrances & Terraces

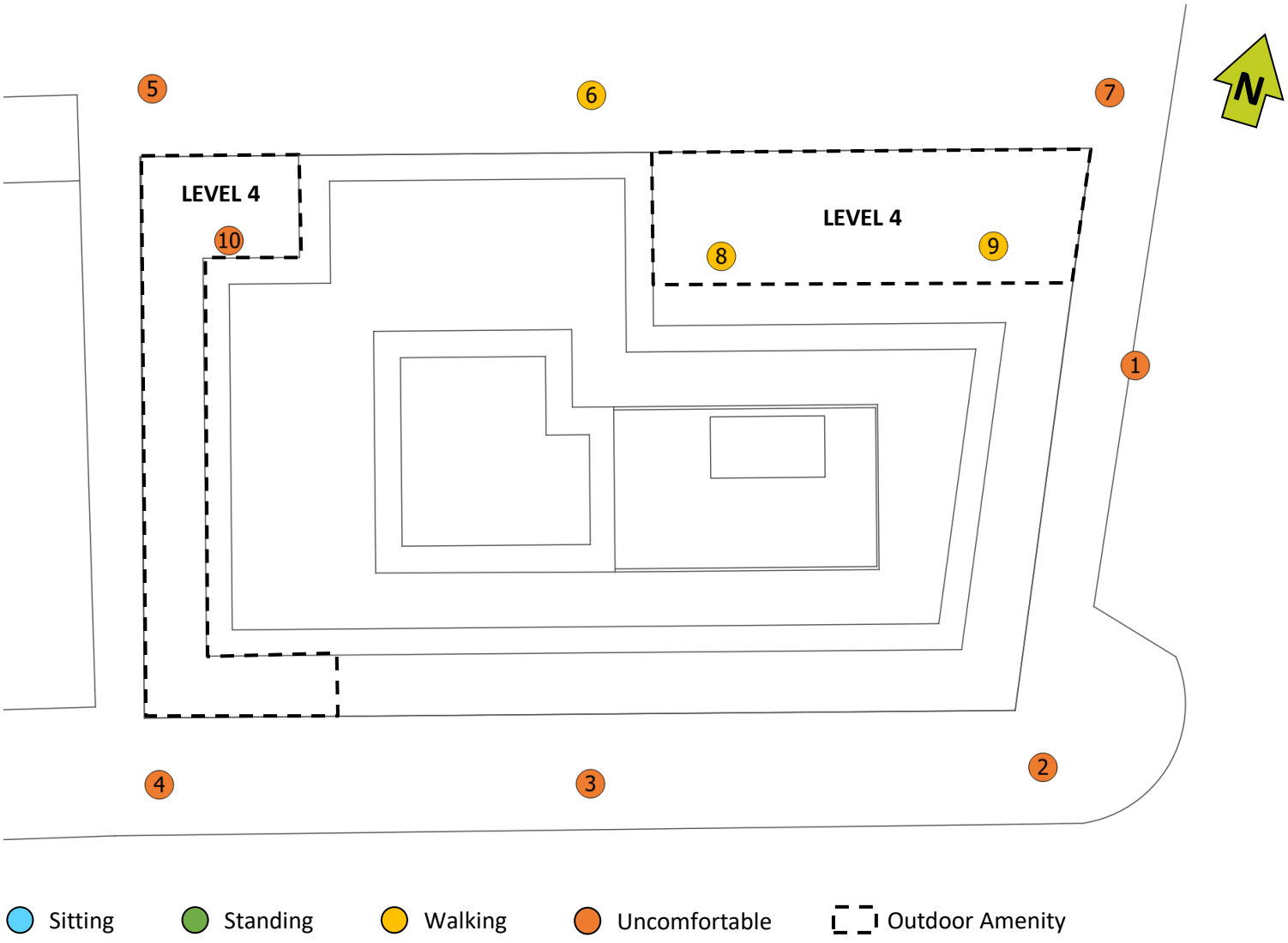


Figure 8b: Proposed Configuration – Pedestrian Wind Comfort – Winter – Building Entrances & Terraces

4.2 Amenity Terraces (Locations 8-10)

On the Level 4 amenity terrace, wind conditions are comfortable for standing in the summer, with the exception of the northwest corner (Location 10), where wind conditions are uncomfortable (**Figure 8a**). During the winter months, wind conditions are comfortable for walking, with uncomfortable wind conditions at the northwest corner (**Figure 8b**).

To improve wind conditions on the terrace, we recommend installing a tall perimeter screen (minimum 2.2 m in height) along the perimeter of the terrace. In addition, horizontal features such as pergolas or trellises should be considered at the northwest corner of the terrace, as well as near seating areas.

4.3 Surrounding Sidewalks (Locations 11-79)

Existing wind conditions along the nearby sidewalks of Eglinton Avenue West, Keele Street, Yore Road, Lester Avenue, Trethewey Drive, Cameron Avenue and Scott Road are comfortable for walking or better year-round. At the Keelesdale Station (Locations 11, 14 through 17, 55 and 58) and at the nearby transit stops along Yore Road (Locations 29 and 30) and Eglinton Avenue West (Locations 41, 45 and 47) wind conditions are generally comfortable for standing or walking year-round (**Figures 7a** and **7b**).

In the Proposed Configuration, wind conditions along the surrounding sidewalks are generally comfortable for walking or better throughout the year. At the nearby transit stops, wind conditions are generally comfortable for walking or better, with the exception of one entry to Keelesdale Station (Location 11) and one stop along Eglinton Avenue West (Location 41), where wind conditions are uncomfortable during the winter (**Figure 9b**).

4.4 Wind Safety

In the Existing Configuration, the wind safety criterion was met in all areas on-site and surrounding the existing site (**Figure 10a**).

In the Proposed Configuration, the wind safety criterion was met in all but the following on-site areas:

- At the northwest corner (Locations 1 and 7) and southwest corner (Location 4) of the proposed development at grade.
- At the northwest corner of Level 4 terrace (Location 10).

Off-site, the wind safety criterion is met at in all areas except at the nearby transit station entrance (Location 11) and a nearby transit stop along Eglinton Avenue West (Location 41).

Wind control measures described in **Sections 4.1** and **4.2** will be beneficial to eliminate wind safety concerns in these areas.

Examples of wind control measures are shown in **Figure 11**. SLR will work the design team to determine practical and effective mitigation measures prior to the next planning submission.

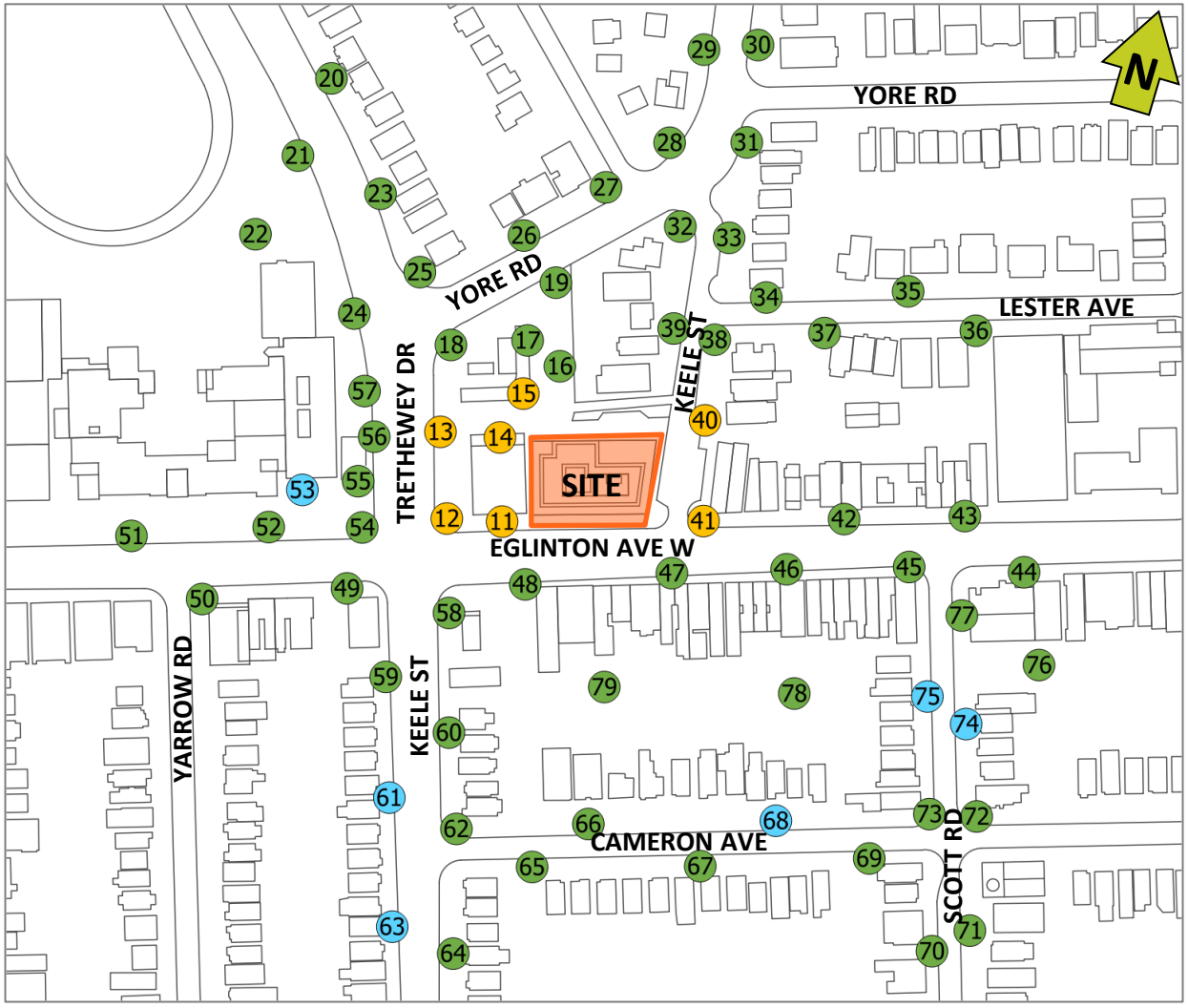


Figure 9a: Proposed Configuration – Pedestrian Wind Comfort – Summer – Surrounding Sidewalks

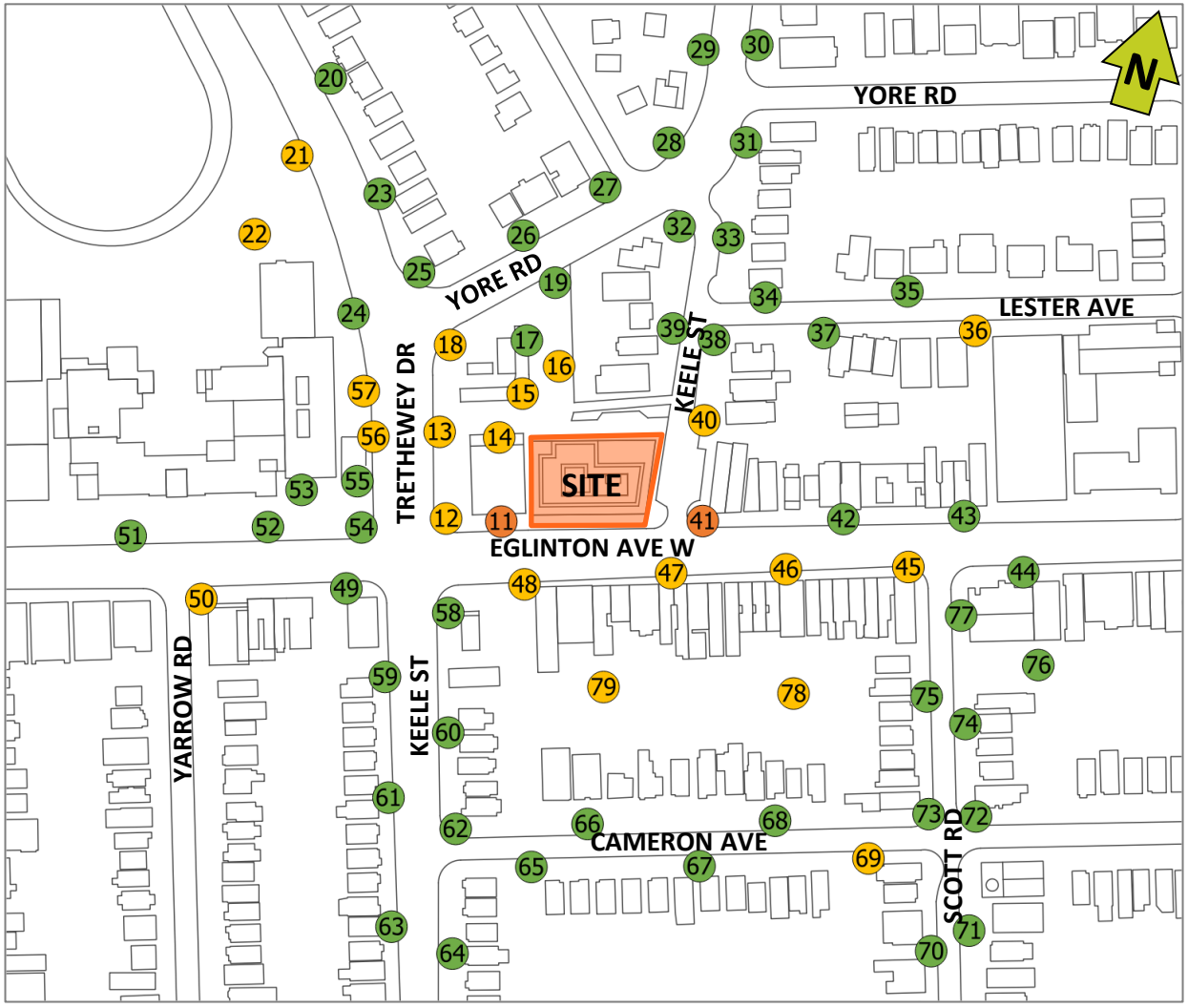


Figure 9b: Proposed Configuration – Pedestrian Wind Comfort – Winter – Surrounding Sidewalks

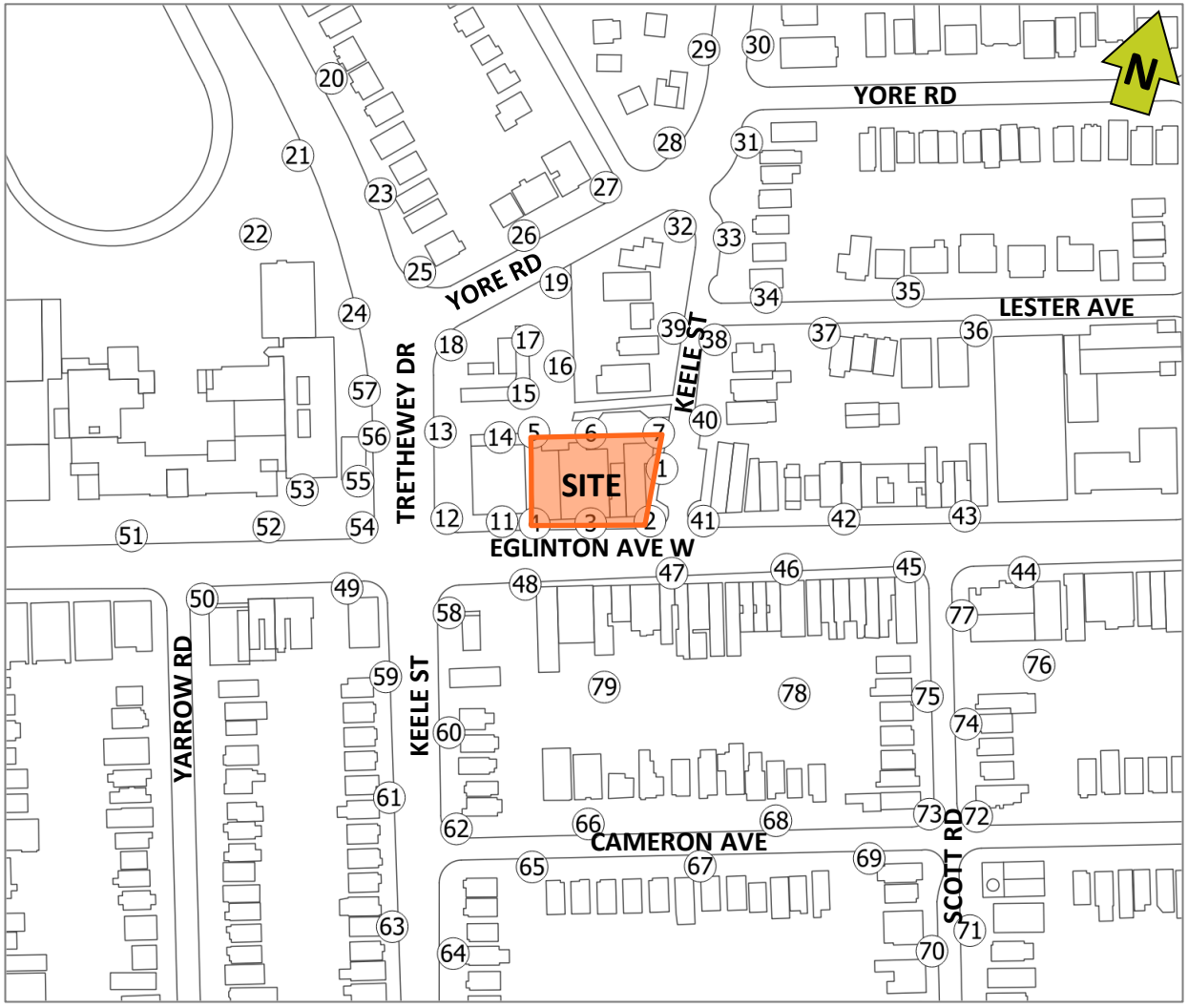


Figure 10a: Existing Configuration – Pedestrian Wind Safety – Annual – On-site & Surrounding Sidewalks

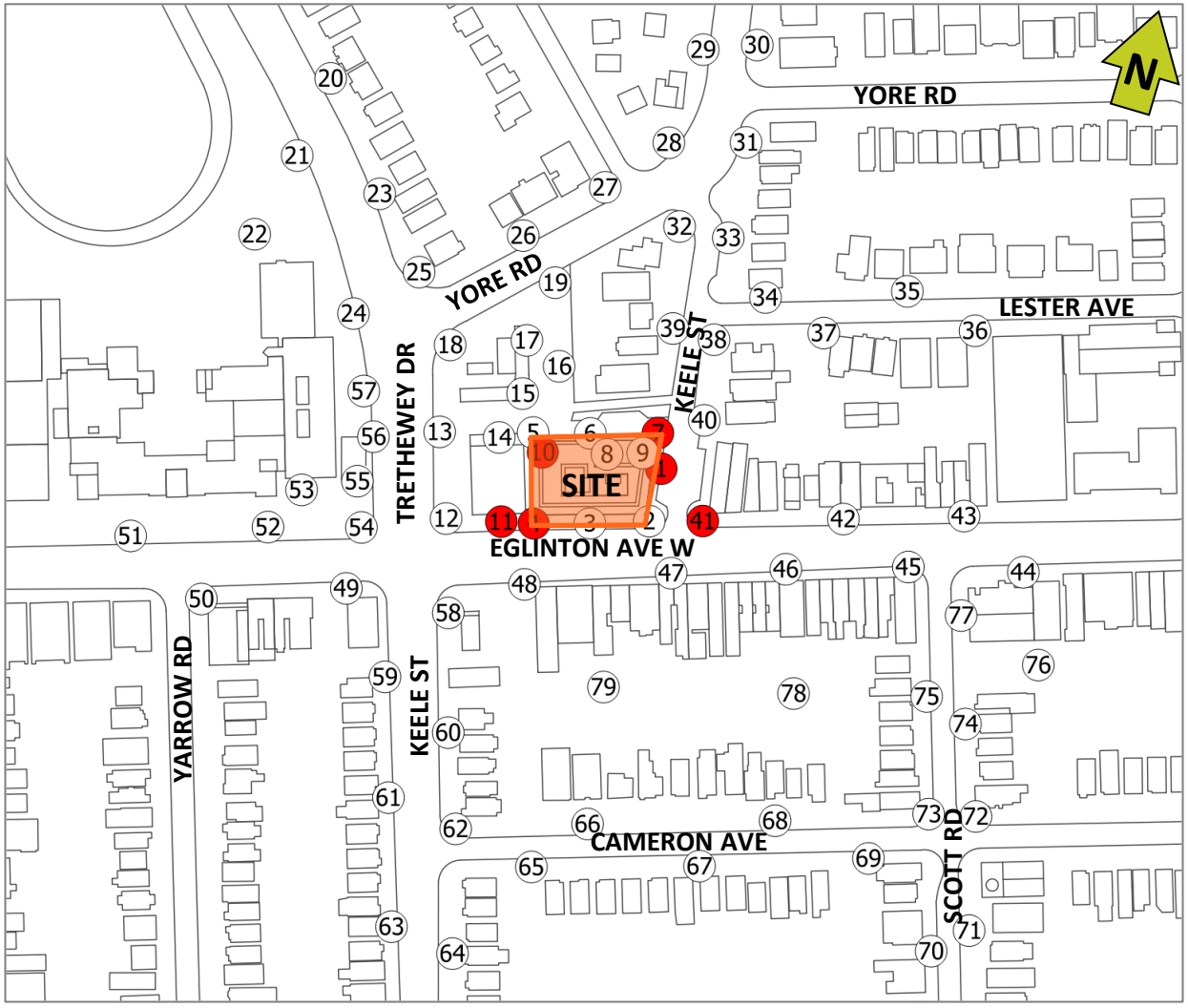
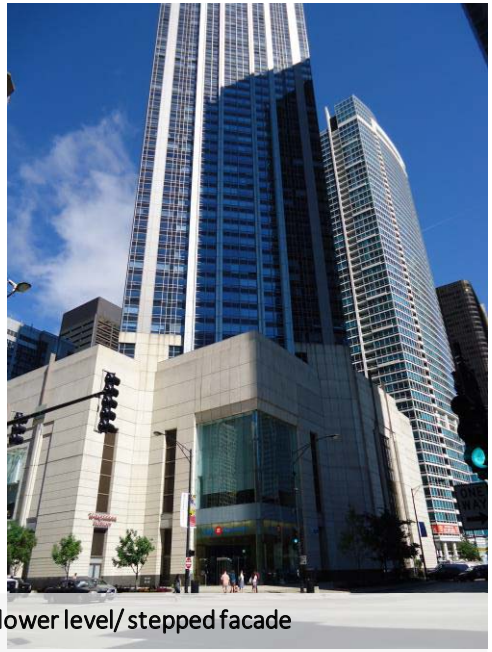


Figure 10b: Proposed Configuration – Pedestrian Wind Safety – Annual – Surrounding Sidewalks



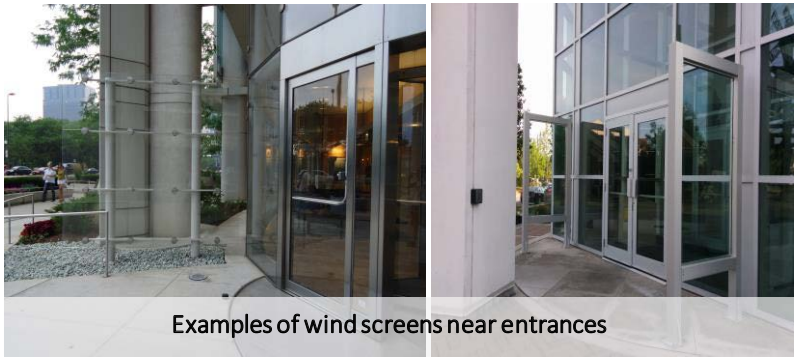


Figure 11: Examples of wind control measures for at grade level

Examples of horizontal features (canopy, umbrellas) near entrance and seating areas

5.0 CONCLUSIONS & RECOMMENDATIONS

The pedestrian wind conditions predicted for the proposed development at 2634, 2636, 2640, 2642, & 2654 Eglinton Avenue West and 1856 & 1856A Keele Street in Toronto have been assessed through wind tunnel modeling techniques. Based on the results of our study, the following conclusions have been reached:

- Wind safety criterion is met annually at all but three locations on-site and two locations off-site. In addition, the wind safety criterion is exceeded at the northwest corner of the Level 4 terrace. Wind control measures are recommended.
- Wind conditions on the site are generally comfortable for walking or better. However, wind conditions are uncomfortable around the proposed development during the winter months. Wind control measures are recommended.
- On the terrace at Level 4, wind conditions are comfortable for standing or walking on the east side year-round. Wind conditions are uncomfortable at the northwest corner of the terrace year-round. Wind control measures are recommended for the terrace.
- Wind conditions along the surrounding sidewalks are generally comfortable for walking or better throughout the year. However, wind conditions at a few transit stops along Eglinton Avenue West are uncomfortable during the winter in the Proposed Configuration.
- SLR will work the design team to determine practical and effective mitigation measures prior to the next planning submission.

6.0 LIMITATIONS OF LIABILITY

This report has been prepared and the work referred to in this report has been undertaken by SLR Consulting (Canada) Ltd. (SLR) for Fora Developments , hereafter referred to as the “Client”. It is intended for the sole and exclusive use of the Client. The report has been prepared in accordance with the Scope of Work and agreement between SLR and the Client. Other than by the Client and by the City of Toronto in their role as land use planning approval authorities, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted unless payment for the work has been made in full and express written permission has been obtained from SLR.

This report has been prepared in a manner generally accepted by professional consulting principles and practices for the same locality and under similar conditions. No other representations or warranties, expressed or implied, are made.

Opinions and recommendations contained in this report are based on conditions that existed at the time the services were performed and are intended only for the client, purposes, locations, time frames and project parameters as outlined in the Scope or Work and agreement between SLR and the Client. The data reported, findings, observations and conclusions expressed are limited by the Scope of Work. SLR is not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. SLR does not warranty the accuracy of information provided by third party sources.

7.0 REFERENCES

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Appendix A

Pedestrian Wind Comfort Conditions

Spring (March - May) and Autumn (September - November)

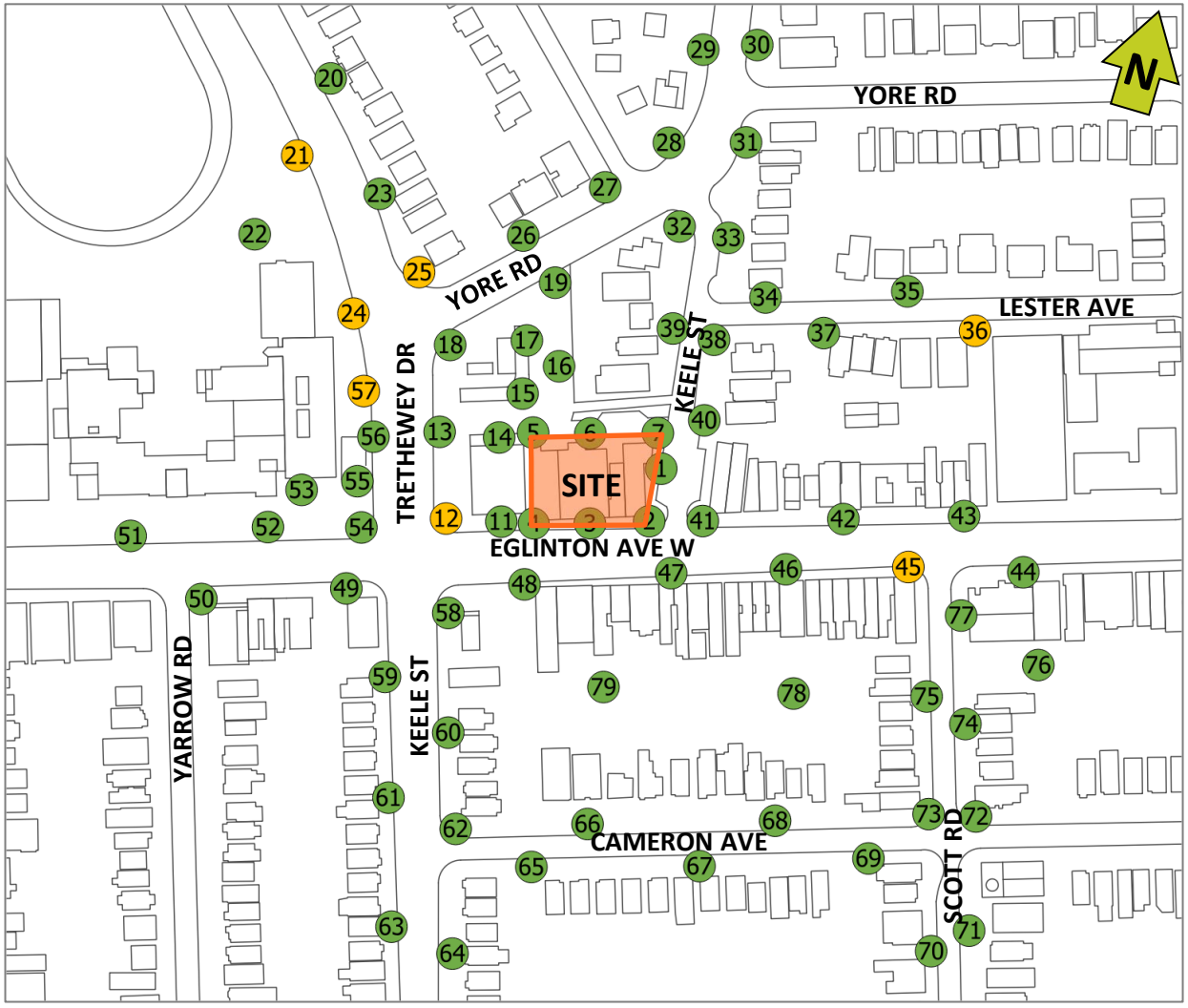


Figure A1a: Existing Configuration – Pedestrian Wind Comfort – Spring – On-site & Surrounding Sidewalks

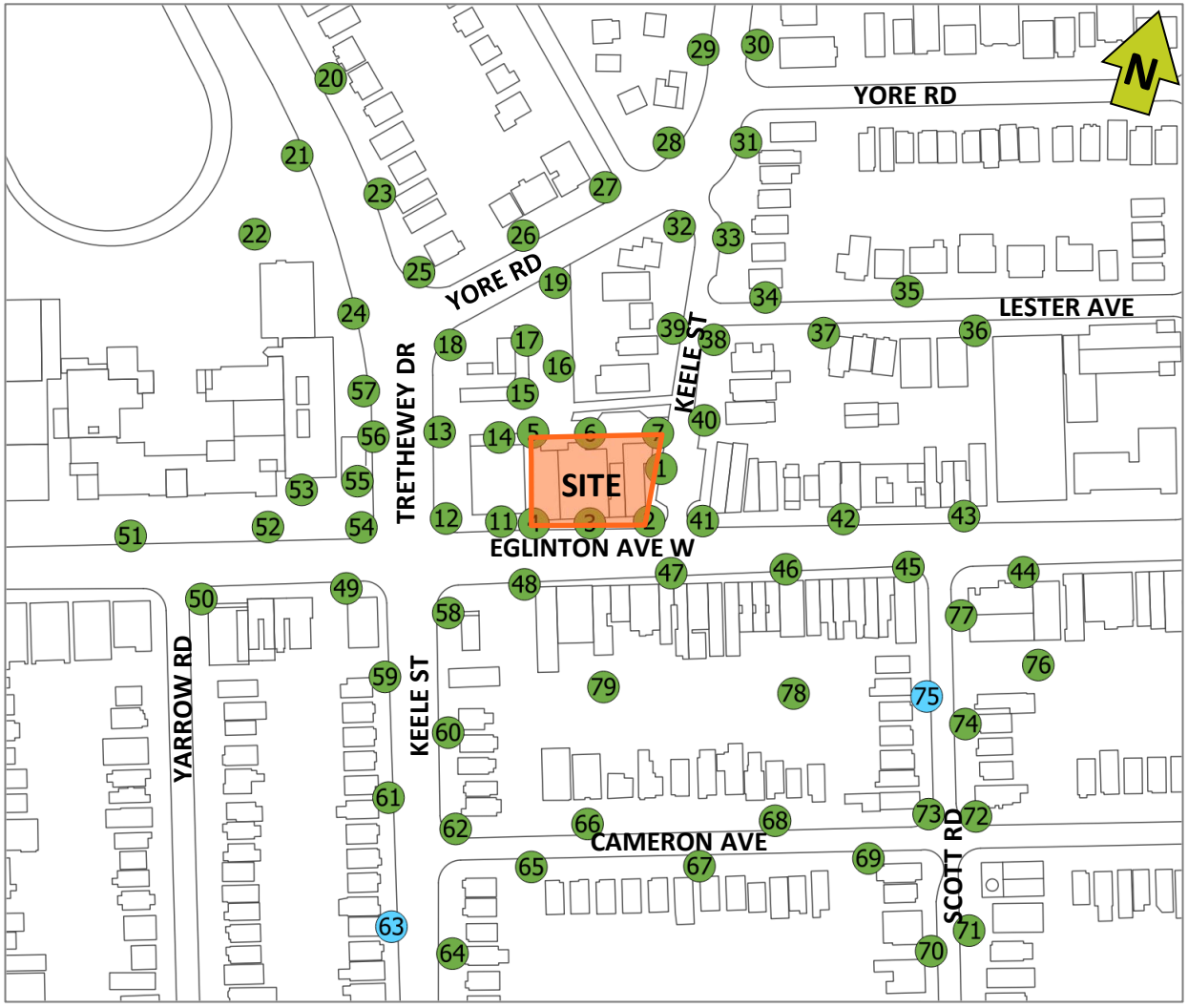
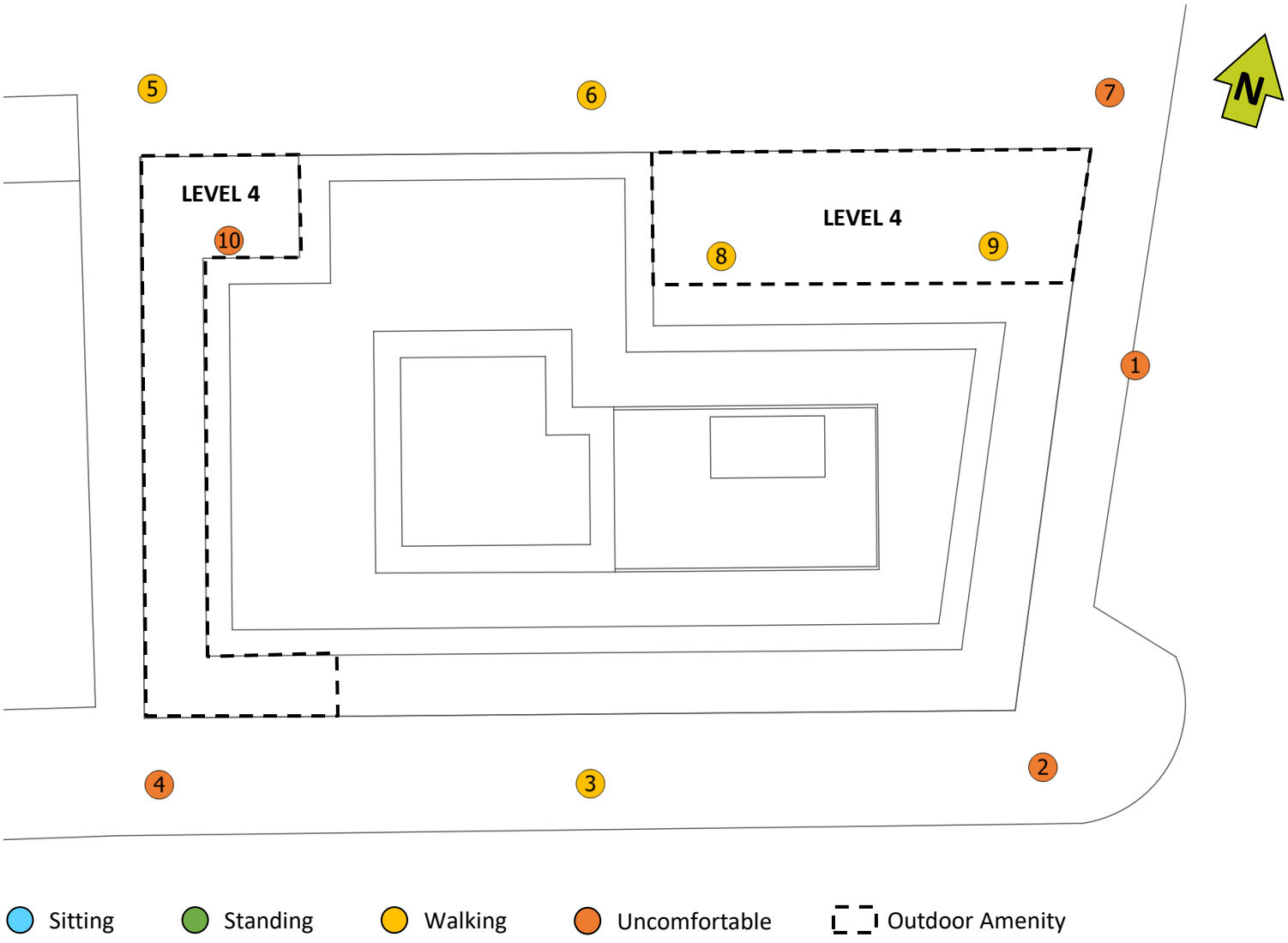


Figure A1b: Existing Configuration – Pedestrian Wind Comfort – Autumn – On-site & Surrounding Sidewalks



FigureA28a: Proposed Configuration – Pedestrian Wind Comfort – Spring – Building Entrances & Terraces

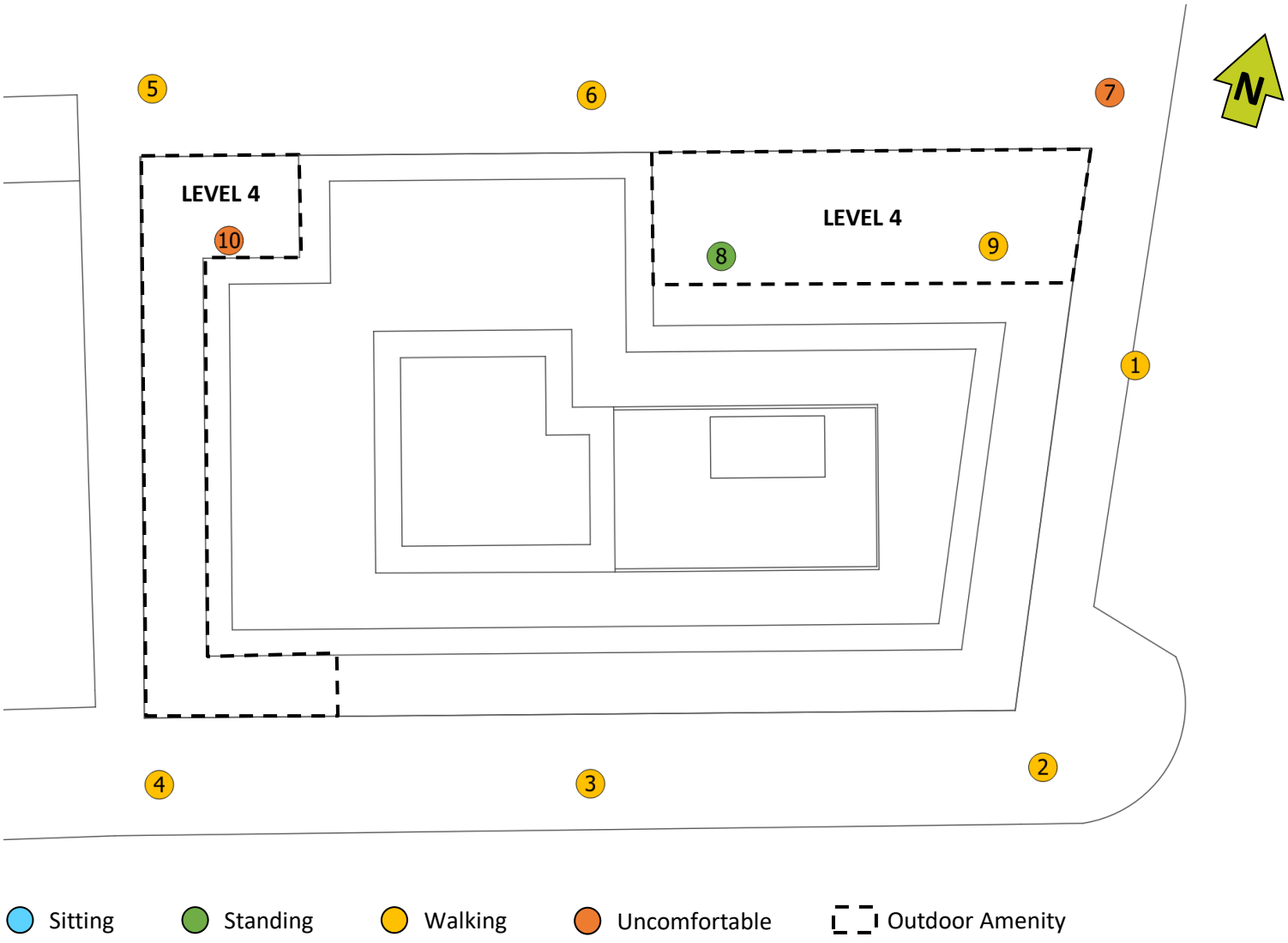


Figure A2b: Proposed Configuration – Pedestrian Wind Comfort – Autumn – Building Entrances & Terraces

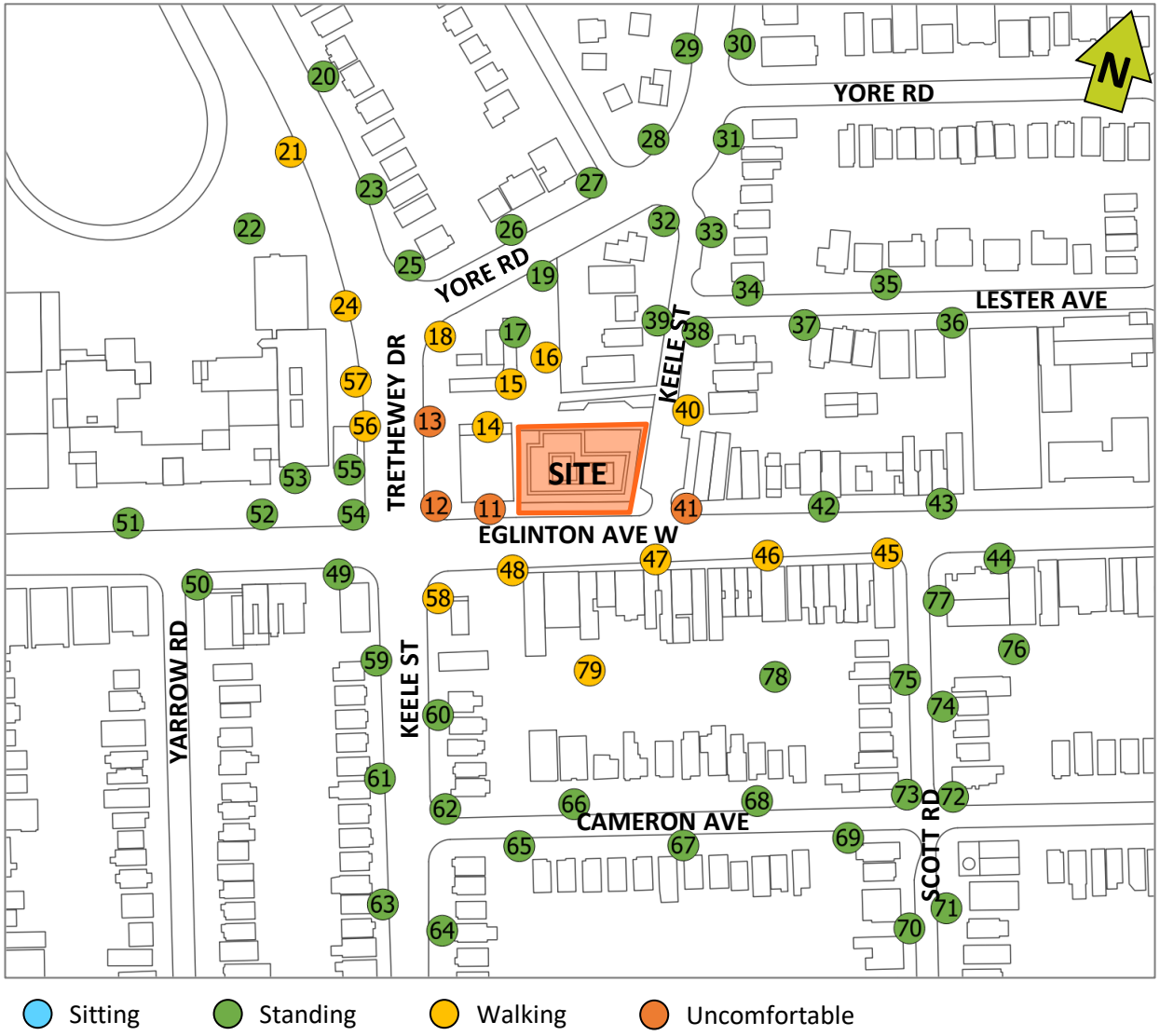


Figure A3a: Proposed Configuration – Pedestrian Wind Comfort – Spring – Surrounding Sidewalks

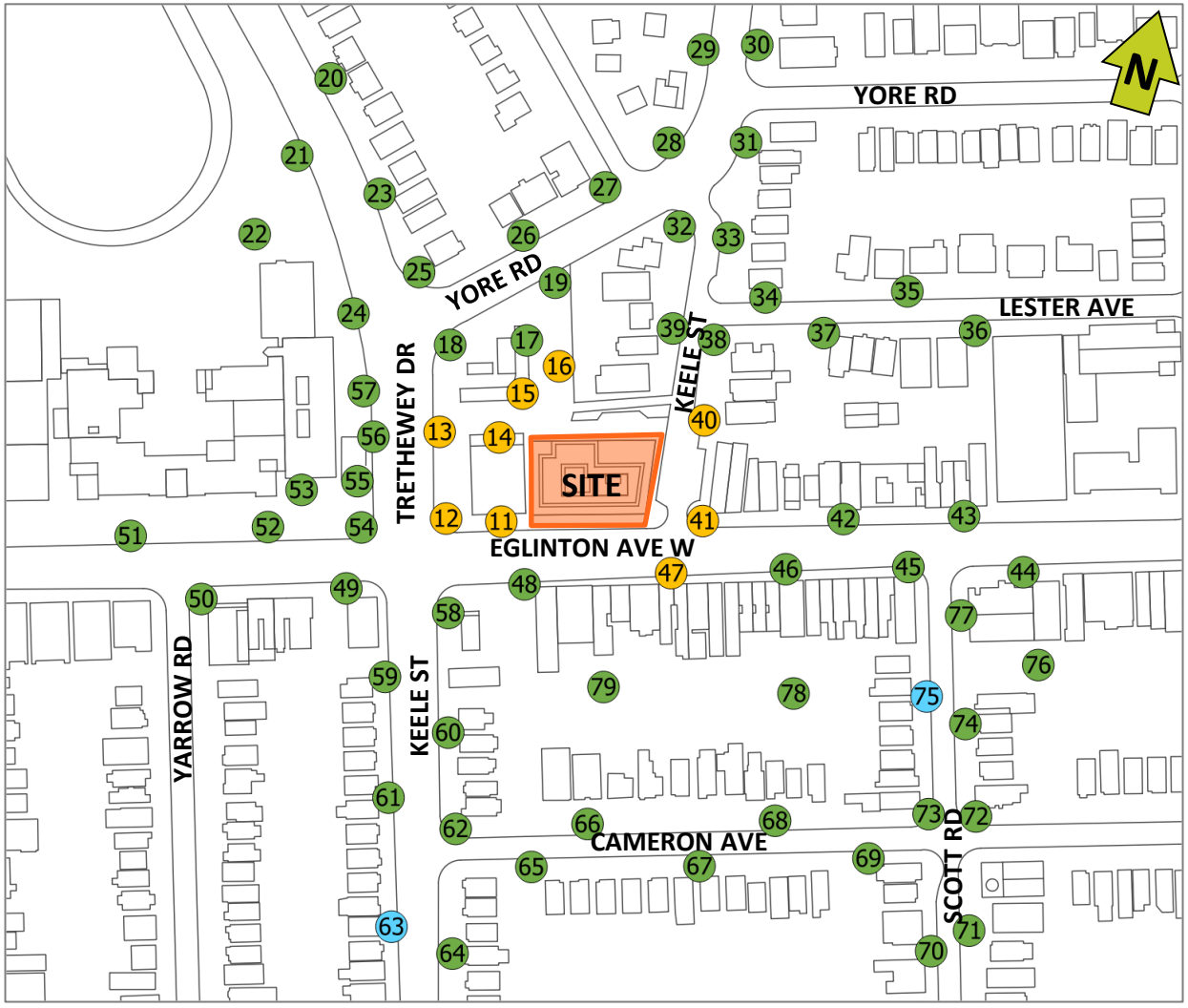


Figure A3b: Proposed Configuration – Pedestrian Wind Comfort – Autumn – Surrounding Sidewalks

Appendix B

Pedestrian Wind Comfort & Safety Tables

INTERPRETATION OF RESULTS

Table 1 below illustrates the wind comfort and safety criteria. The table provides the GEM (Gust Equivalent Mean) wind speed (in km/h) exceeded 20% of the time for comfort for each of the four seasons for each configuration. It also categorizes the wind speeds as either sitting, standing, walking or uncomfortable. In addition, the table provides the gust wind speed exceeded 0.1% of the time annually.

For instance, at Location 1 there is not data in the Existing Configuration, while in the Proposed Configuration, wind conditions are suitable for walking in the winter, spring and autumn seasons, while in the summer wind conditions are suitable for standing.

At Location 3, wind conditions are suitable for walking in the winter, spring and autumn seasons in the Existing Configuration, while in the summer wind conditions are conducive to sitting. In the Proposed Configuration, wind conditions are suitable for walking in the spring and autumn, standing in the summer, and uncomfortable in the winter. In addition, the safety criteria is exceeded on an annual basis at Location 3 in the Proposed Configuration.

Table 1: Pedestrian Wind Conditions

Location	Configuration	Wind Comfort				Wind Safety
		GEM Speed Exceeded 20% of the Time (km/h)				Gust Speed Exceeded 0.1% of the Time (km/h)
		Winter	Spring	Summer	Autumn	
1	Existing					
1	Proposed	19.3	18.3	15.0	16.1	71.7
2	Existing	12.5	11.3	6.8	11.7	71.4
2	Proposed	16.6	18.1	14.7	15.8	80.0
3	Existing	17.6	14.2	9.8	15.8	79.5
3	Proposed	20.9	15.7	10.3	18.6	95.6

Table 2: Categories

Criteria	Speed
Sitting	≤ 10 km/h
Standing	≤ 15 km/h
Walking	≤ 20 km/h
Uncomfortable	> 20 km/h
Safety	> 90 km/h

Table B1-1: Pedestrian Wind Conditions

Location	Configuration	Wind Comfort				Wind Safety
		GEM Speed Exceeded 20% of the Time (km/h)				Gust Speed Exceeded 0.1% of the Time (km/h)
		Winter	Spring	Summer	Autumn	
1	Existing	11.4	12.1	9.8	10.3	44.6
1	Proposed	20.2	21.9	18.6	18.8	111.2
2	Existing	13.6	13.1	11.1	12.1	48.5
2	Proposed	21.9	21.6	17.9	19.3	84.9
3	Existing	11.6	11.4	9.7	10.5	43.5
3	Proposed	20.1	18.8	15.3	17.0	86.7
4	Existing	12.3	11.5	9.8	10.9	46.4
4	Proposed	21.2	20.3	16.5	17.8	98.3
5	Existing	12.9	12.8	10.2	11.2	58.1
5	Proposed	20.6	19.3	16.0	18.0	78.1
6	Existing	12.2	12.2	9.8	10.6	50.4
6	Proposed	19.9	19.0	15.3	17.2	79.4
7	Existing	14.5	14.6	11.8	12.7	59.0
7	Proposed	25.5	25.0	20.8	22.2	105.5
8	Existing					
8	Proposed	16.9	16.9	13.2	14.5	80.6
9	Existing					
9	Proposed	18.0	17.2	13.7	15.2	87.4
10	Existing					
10	Proposed	28.0	25.5	21.4	23.8	112.9

Table B1-2: Pedestrian Wind Conditions

Location	Configuration	Wind Comfort				Wind Safety
		GEM Speed Exceeded 20% of the Time (km/h)				Gust Speed Exceeded 0.1% of the Time (km/h)
		Winter	Spring	Summer	Autumn	
11	Existing	12.7	11.7	10.0	11.2	49.0
11	Proposed	21.1	21.4	17.6	18.4	111.1
12	Existing	16.3	16.5	13.6	14.6	66.8
12	Proposed	19.7	21.2	17.9	18.5	79.2
13	Existing	15.1	14.7	12.5	13.4	60.7
13	Proposed	19.1	20.0	16.9	17.5	74.3
14	Existing	11.8	12.0	9.5	10.2	51.4
14	Proposed	19.0	19.8	15.7	17.0	83.4
15	Existing	12.4	12.1	9.8	10.8	44.4
15	Proposed	18.4	18.4	15.6	16.6	70.4
16	Existing	12.8	12.8	10.6	11.3	51.3
16	Proposed	18.2	17.1	14.6	16.1	69.7
17	Existing	13.6	13.3	10.9	11.7	56.1
17	Proposed	13.0	13.2	11.3	11.8	48.4
18	Existing	14.6	13.9	11.8	12.8	62.2
18	Proposed	15.5	15.5	14.1	14.6	57.7
19	Existing	13.8	13.4	11.1	12.0	52.7
19	Proposed	14.3	14.3	12.5	13.3	51.7
20	Existing	12.8	12.2	10.3	11.2	55.3
20	Proposed	12.6	12.2	10.5	11.1	53.6

Table B1-3: Pedestrian Wind Conditions

Location	Configuration	Wind Comfort				Wind Safety
		GEM Speed Exceeded 20% of the Time (km/h)				Gust Speed Exceeded 0.1% of the Time (km/h)
		Winter	Spring	Summer	Autumn	
21	Existing	16.5	15.5	12.8	14.3	65.4
21	Proposed	16.3	15.3	12.8	14.2	64.5
22	Existing	15.2	14.2	11.6	13.1	57.7
22	Proposed	15.2	14.3	11.6	13.1	56.9
23	Existing	13.5	13.1	11.1	11.9	57.1
23	Proposed	13.3	13.4	11.8	12.3	54.3
24	Existing	15.0	16.0	12.7	13.6	65.0
24	Proposed	14.3	15.8	12.8	13.3	65.0
25	Existing	15.8	15.0	12.4	13.7	64.3
25	Proposed	14.8	14.7	12.9	13.6	58.4
26	Existing	12.8	11.7	9.8	11.1	50.6
26	Proposed	14.2	14.0	12.3	13.0	52.0
27	Existing	14.2	13.9	11.6	12.6	54.5
27	Proposed	14.0	13.7	11.7	12.7	50.8
28	Existing	13.2	12.6	10.5	11.6	48.7
28	Proposed	13.4	12.7	10.8	11.8	49.4
29	Existing	12.5	12.5	10.6	11.3	46.1
29	Proposed	12.3	12.4	10.5	11.2	45.3
30	Existing	14.6	14.8	12.3	13.0	64.3
30	Proposed	14.4	14.6	12.1	12.8	61.8

Table B1-4: Pedestrian Wind Conditions

Location	Configuration	Wind Comfort				Wind Safety
		GEM Speed Exceeded 20% of the Time (km/h)				Gust Speed Exceeded 0.1% of the Time (km/h)
		Winter	Spring	Summer	Autumn	
31	Existing	14.0	14.1	11.3	12.2	60.6
31	Proposed	13.7	13.7	11.0	11.9	57.6
32	Existing	14.4	14.0	11.7	12.5	59.2
32	Proposed	15.0	14.5	12.6	13.4	59.5
33	Existing	13.8	13.6	11.3	12.1	57.5
33	Proposed	13.6	13.2	11.0	11.9	55.3
34	Existing	13.2	11.8	10.1	11.4	54.7
34	Proposed	13.8	12.7	10.9	12.1	56.2
35	Existing	14.1	13.1	11.3	12.5	53.6
35	Proposed	14.1	13.3	11.5	12.6	54.9
36	Existing	15.2	15.1	12.3	13.2	58.9
36	Proposed	15.2	14.9	12.5	13.4	58.6
37	Existing	14.3	13.3	11.2	12.6	53.6
37	Proposed	13.8	13.0	11.0	12.2	52.2
38	Existing	13.1	12.9	10.8	11.7	48.9
38	Proposed	13.9	13.6	12.0	12.8	52.1
39	Existing	12.1	12.4	10.2	10.7	49.4
39	Proposed	12.7	14.0	12.2	12.5	50.6
40	Existing	13.5	13.5	11.2	11.9	55.5
40	Proposed	19.6	18.7	16.2	17.7	77.5

Table B1-5: Pedestrian Wind Conditions

Location	Configuration	Wind Comfort				Wind Safety
		GEM Speed Exceeded 20% of the Time (km/h)				Gust Speed Exceeded 0.1% of the Time (km/h)
		Winter	Spring	Summer	Autumn	
41	Existing	14.9	15.0	11.9	13.0	63.1
41	Proposed	20.9	20.6	17.3	18.4	104.3
42	Existing	13.3	13.1	11.1	12.0	51.6
42	Proposed	14.1	13.5	11.5	12.6	54.9
43	Existing	12.6	12.3	10.4	11.4	46.5
43	Proposed	13.4	12.9	10.7	11.9	48.9
44	Existing	13.6	13.3	10.7	11.8	53.2
44	Proposed	13.7	13.5	10.9	11.9	53.2
45	Existing	15.2	15.1	12.2	13.1	64.5
45	Proposed	15.9	15.8	12.6	13.8	72.3
46	Existing	13.5	13.6	10.8	11.6	57.3
46	Proposed	15.2	15.2	12.6	13.4	69.3
47	Existing	12.5	12.4	9.8	10.8	53.1
47	Proposed	18.2	17.5	14.7	15.8	88.5
48	Existing	13.2	13.1	10.7	11.6	48.3
48	Proposed	16.0	16.4	13.2	13.9	69.3
49	Existing	14.8	14.5	11.9	13.0	58.7
49	Proposed	14.8	14.7	11.9	12.9	56.3
50	Existing	15.3	14.8	12.1	13.5	55.9
50	Proposed	15.0	14.6	11.8	13.3	55.7

Table B1-6: Pedestrian Wind Conditions

Location	Configuration	Wind Comfort				Wind Safety
		GEM Speed Exceeded 20% of the Time (km/h)				Gust Speed Exceeded 0.1% of the Time (km/h)
		Winter	Spring	Summer	Autumn	
51	Existing	14.1	13.5	10.9	12.4	54.8
51	Proposed	13.9	13.6	10.8	12.2	54.3
52	Existing	14.8	14.1	11.5	12.9	58.5
52	Proposed	14.1	13.5	11.0	12.2	56.1
53	Existing	11.5	11.2	9.4	10.3	47.1
53	Proposed	11.7	11.4	9.7	10.5	46.5
54	Existing	13.7	13.1	10.8	12.0	51.5
54	Proposed	13.7	13.6	11.1	12.0	49.9
55	Existing	11.9	11.5	10.3	11.1	45.5
55	Proposed	12.1	11.7	10.3	11.2	45.6
56	Existing	13.8	14.7	11.7	12.3	56.7
56	Proposed	15.5	16.3	13.4	14.1	60.2
57	Existing	14.4	15.5	12.1	12.8	65.5
57	Proposed	15.8	16.4	13.2	14.2	65.5
58	Existing	13.0	13.0	10.7	11.5	54.9
58	Proposed	15.0	15.8	12.5	13.0	69.6
59	Existing	11.7	12.3	10.0	10.5	47.1
59	Proposed	12.6	13.2	10.6	11.1	50.4
60	Existing	12.1	11.7	9.8	10.7	45.2
60	Proposed	12.5	12.5	10.1	11.0	51.3

Table B1-7: Pedestrian Wind Conditions

Location	Configuration	Wind Comfort				Wind Safety
		GEM Speed Exceeded 20% of the Time (km/h)				Gust Speed Exceeded 0.1% of the Time (km/h)
		Winter	Spring	Summer	Autumn	
61	Existing	11.6	12.3	10.0	10.4	48.6
61	Proposed	11.8	12.4	10.0	10.4	48.0
62	Existing	13.7	13.8	11.1	12.1	58.6
62	Proposed	14.4	14.5	11.5	12.6	59.1
63	Existing	10.6	11.6	9.2	9.6	43.9
63	Proposed	10.2	11.2	8.7	9.2	42.4
64	Existing	12.5	12.1	10.2	11.0	50.7
64	Proposed	12.5	11.9	10.0	10.9	49.1
65	Existing	12.6	12.4	10.2	11.1	49.3
65	Proposed	13.0	12.9	10.5	11.4	56.0
66	Existing	12.6	11.6	9.9	11.0	53.2
66	Proposed	13.2	12.3	10.3	11.4	53.9
67	Existing	12.6	12.4	10.1	10.9	56.7
67	Proposed	13.4	13.3	10.8	11.5	58.3
68	Existing	11.6	11.4	9.3	10.2	45.2
68	Proposed	12.2	11.9	9.7	10.7	47.1
69	Existing	15.1	14.4	11.9	13.1	57.9
69	Proposed	15.4	14.5	12.0	13.3	58.1
70	Existing	13.9	13.7	11.1	12.0	62.9
70	Proposed	13.9	13.7	11.1	12.1	58.9

Table B1-8: Pedestrian Wind Conditions

Location	Configuration	Wind Comfort				Wind Safety
		GEM Speed Exceeded 20% of the Time (km/h)				Gust Speed Exceeded 0.1% of the Time (km/h)
		Winter	Spring	Summer	Autumn	
71	Existing	12.5	12.4	10.0	10.9	52.3
71	Proposed	12.5	12.3	10.0	10.8	52.9
72	Existing	13.2	13.0	10.4	11.6	52.2
72	Proposed	13.4	13.2	10.6	11.7	52.5
73	Existing	13.3	13.0	10.6	11.7	48.3
73	Proposed	13.6	13.2	10.8	12.0	49.4
74	Existing	11.5	11.0	9.3	10.1	46.1
74	Proposed	11.8	11.3	9.5	10.3	47.2
75	Existing	10.2	10.6	8.6	9.3	37.8
75	Proposed	10.7	11.2	8.9	9.6	40.9
76	Existing	13.9	13.9	11.1	12.2	61.4
76	Proposed	13.5	13.6	10.9	12.0	54.9
77	Existing	13.1	12.4	10.4	11.4	50.9
77	Proposed	13.3	12.8	10.7	11.6	51.4
78	Existing	14.0	12.8	10.6	11.9	59.1
78	Proposed	15.7	14.4	12.1	13.4	76.7
79	Existing	12.8	12.4	10.0	11.2	49.7
79	Proposed	15.8	16.2	12.8	13.8	81.2